

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The Final Office Action dated August 10, 2007 has been received and its contents carefully reviewed.

Claims 27-34 are pending. Reexamination and reconsideration of the pending claims are respectfully requested.

In the Office Action, claims 27-34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,147,667 to Yamazaki et al. (hereinafter "Yamazaki") in view of Single-Crystal Si-Films via a Low Substrate Temperature Excimer-Laser Crystallization Method by Sposili et al. (hereinafter "Sposili").

The rejection of claims 27-34 as being unpatentable over Yamazaki in view of Sposili is respectfully traversed and reconsideration is requested.

Claim 27 is allowable over Yamazaki in view of Sposili in that the structure of claim 27 recites a combination of elements including, for example, "wherein the controller unit includes an active layer in which silicon grains have a length beyond a single-pulse lateral growth distance." None of the cited references, singly or in combination, teaches or suggests at least these features of the claimed invention. Yamazaki merely discloses a well-known method of silicon crystallization. That is, an amorphous silicon layer is first grown by conventional methods, such as CVD methods or sputtering methods. *See* column 6, lines 19-21. Crystallization is then performed to crystallize the amorphous silicon layer by using additional conventional methods. That is, a metal, such as nickel, is added into the amorphous silicon film. *See* column 6, lines 29-36. Applicant agrees with the Examiner's statement that Yamazaki does not disclose the controller unit including an active layer in which silicon grains have a length beyond a single pulse lateral growth distance. Furthermore, there is no suggestion in Yamazaki that the "silicon grains" are capable of having "a length beyond a single-pulse lateral growth distance."

Applicant respectfully submits Sposili fails to cure the deficiencies of Yamazaki. Sposili discloses a sequential lateral solidification (SLS) process. Applicant respectfully submits that the SLS process of Sposili would not work in the method of Yamazaki and thus would not produce "silicon grains" that "have a length beyond a single-pulse lateral growth distance" in a "liquid crystal display device." SLS is performed at a relatively low heat, such that the temperature does not affect an underlying substrate. The conventional crystallization method, used by Yamazaki as discussed above, is performed at a high temperature. This method is incapable of producing "silicon grains" that "have a length beyond a single-pulse lateral growth distance." Because the temperature of the Yamazaki process is much higher than the temperature of the Sposili process, the Sposili process would not work in the Yamazaki process to produce "silicon grains" that "have a length beyond a single-pulse lateral growth distance" in a "liquid crystal display device."

The Examiner states in the last Office Action that one of ordinary skill in the art would apply the SLS method of Sposili in Yamazaki as Yamazaki's active layer could allegedly be formed under low temperature as well as known high temperature processing. *See* pages 3-4 of the last Final Office Action.

However, Applicant respectfully submits that one of ordinary skill in the art would not and could not combine Yamazaki and Sposili and arrive at the claimed invention with any reasonable expectation of success. M.P.E.P. 2143.01 states that "if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984)." Yamazaki teaches an active matrix display. *See* Abstract. The purpose of Yamazaki is to integrate a logic circuit requiring higher speed operation. *See* column 1, lines 60-61; column 2, lines 9-11. Yamazaki discloses prior art silicon thin films; however, Yamazaki discloses that it is difficult to form a logic circuit using these silicon thin films. *See* column 1, lines 50-59. Yamazaki then proposes a silicon thin film according to his invention. *See* column 6, lines 1-5. Yamazaki specifically discloses that "a heat treatment of 700 to 1100°C is necessary to form the silicon thin film used in the present invention." *See* column 6, lines 14-16 and 29-37; column 7, lines 13-18. Further, Yamazaki discloses additional processing at high

temperatures, such as 800-1000°C. *See* column 7, lines 58-65; column 9, lines 8-15. Indeed, Yamazaki refers to prior art low temperature silicon films formed at temperatures below 600°C. *See* column 1, lines 54-59. Thus, Yamazaki discloses that processing at high temperatures is necessary to his invention.

On the other hand, Sposili merely discloses low energy and low temperature processing. The sequential lateral solidification (SLS) process of Sposili is a low energy method of melting silicon using UV pulses. *See* page 953-954. The low heat method of SLS does not affect the underlying substrate. Since Yamazaki specifically discloses high temperature processing is necessary, one of ordinary skill in the art would not look to Sposili to modify Yamazaki. That is, Yamazaki is not properly modifiable by Sposili because the modification would render Yamazaki unsuitable for its intended purpose. Accordingly, Applicant respectfully submits that the modification is improper.

Furthermore, Applicant respectfully submits that the Examiner is improperly using hindsight to establish using SLS technology in forming a “liquid crystal display device” having “silicon grains” that “have a length beyond a single-pulse lateral growth distance.” At the time of the present invention, SLS technology was brand new. Accordingly, because the cited references fail to teach the features of claim 27, Applicant respectfully submits that claim 27 and claims 28-34, which depend therefrom, are allowable over Yamazaki in view of Sposili.

Applicants believe the foregoing remarks place the application in condition for allowance and early, favorable action is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the

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filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

Dated: October 31, 2007

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Eric J. Nuss". The signature is fluid and cursive, with the first name "Eric" being more prominent than the last name "Nuss".

By

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